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1 [Probabilistic adaptive direct optimism control in Time Warp](#)

Alois Ferscha

July 1995 **ACM SIGSIM Simulation Digest , Proceedings of the ninth workshop on Parallel and distributed simulation PADS '95**, Volume 25 Issue 1

Publisher: IEEE Computer Society, ACM Press

Full text available:

 pdf(1.50 MB)

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In a distributed memory environment the communication overhead of Time Warp as induced by the rollback procedure due to "overoptimistic" progression of the simulation is the dominating performance factor. To limit optimism to an extent that can be justified from the inherent model parallelism, an optimism control mechanism is proposed, which by maintaining a history record of virtual time differences from the time stamps carried by arriving messages, and forecasting the timestamp ...

Keywords: CM-5, PVM, Petri nets, RS6000 cluster, Time Warp, forecast models, optimism control

2 [Why good engineers \(sometimes\) create bad interfaces](#)

Donald R. Gentner, Jonathan Grudin

March 1990 **Proceedings of the SIGCHI conference on Human factors in computing systems: Empowering people CHI '90**

Publisher: ACM Press

Full text available:

 pdf(829.19 KB)

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This paper presents a view of system design that shows how good engineering practice can lead to poor user interfaces. From the engineer's perspective, the ideal interface reflects the underlying mechanism and affords direct access to the control points of the mechanism. The designer of the user interface is often also the designer of the mechanism (or at least is very familiar with the mechanism), and thus has a strong bias toward basing the interface on the engineering model. The user, ho ...

3 [Shock resistant Time Warp](#)

Alois Ferscha, James Johnson

May 1999 **Proceedings of the thirteenth workshop on Parallel and distributed**

simulation PADS '99**Publisher:** IEEE Computer Society

Full text available:  [pdf\(904.99 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)
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In an attempt to cope with time-varying workload, traditional adaptive Time Warp protocols are designed to react in response to performance changes by altering control parameter configurations, like the amount of available memory, the size of the checkpointing interval, the frequency of GVT computation, fossil collection invocations, etc.\ We call those schemes ``reactive'' because all control decisions are undertaken based on historical performance information collected at runtime, and come int ...

4 [Applications in logistics, transportation, and distribution: Advanced aviation concepts via simulation: research flight simulation of future autonomous aircraft operations](#) 

Mario S. V. Valenti Clari, Rob C. J. Ruigrok, Bart W. M. Heesbeen, Jaap Groeneweg

December 2002 **Proceedings of the 34th conference on Winter simulation: exploring new frontiers WSC '02**

Publisher: Winter Simulation Conference

Full text available:  [pdf\(604.28 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

A key element in the development and innovation of future aviation concepts and systems is research flight simulation. Research flight simulation is applied when the performance and perception of human pilots is a key measure of the overall assessment. This paper will give an overview of the research simulation set-up of the National Aerospace Laboratory (NLR), Amsterdam, the Netherlands, which is used for the human-in-the-loop evaluation of future operational concepts. Special attention is g ...

5 [Incentives to help stop floods](#) 

 Clifford Kahn

February 2001 **Proceedings of the 2000 workshop on New security paradigms NSPW '00**

Publisher: ACM Press

Full text available:  [pdf\(588.13 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

6 [Managing time for service and security](#) 

 Ruth Nelson, Elizabeth Schwartz

September 1996 **Proceedings of the 1996 workshop on New security paradigms NSPW '96**

Publisher: ACM Press

Full text available:  [pdf\(380.02 KB\)](#) Additional Information: [full citation](#), [index terms](#)

7 [Intelligent information dissemination services in hybrid satellite-wireless networks](#) 

Eddie C. Shek, Son K. Dao, Yongguang Zhang, Darrel J. Van Buer, Giovanni Giuffrida

December 2000 **Mobile Networks and Applications**, Volume 5 Issue 4

Publisher: Kluwer Academic Publishers

Full text available:  [pdf\(527.68 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The need for rapid deployment and user mobility suggest the use of a hybrid satellite‐wireless network infrastructure for important situation awareness and emergency response applications. An Intelligent Information Dissemination Service <math>IDS</math> has been developed to support the dissemination and maintenance of extended situation awareness throughout such a network information infrastructure in a

seamless manner. One of the goals of IIDS is to transparently handle the mismatches ...

8 Illustrative risks to the public in the use of computer systems and related technology 

 Peter G. Neumann

January 1996 **ACM SIGSOFT Software Engineering Notes**, Volume 21 Issue 1

Publisher: ACM Press

Full text available:  pdf(2.54 MB) Additional Information: [full citation](#)

9 Improving Network Operations With Intelligent Agents 

Nathan J. Muller

July 1997 **International Journal of Network Management**, Volume 7 Issue 3

Publisher: John Wiley & Sons, Inc.

Full text available:  pdf(314.75 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Automating network and system management tasks has never been easier, since the advent of intelligent agents. This article describes the uses and advantages of intelligent agents, to identify and resolve problems locally, instead of dispatching technicians to remote locations, which is both expensive and time‐consuming. © 1997 John Wiley & Sons, Ltd.

10 Illustrative risks to the public in the use of computer systems and related technology 

 Peter G. Neumann

January 1992 **ACM SIGSOFT Software Engineering Notes**, Volume 17 Issue 1

Publisher: ACM Press

Full text available:  pdf(1.65 MB) Additional Information: [full citation](#), [citations](#), [index terms](#)

11 A TCP tuning daemon 

Tom Dunigan, Matt Mathis, Brian Tierney

November 2002 **Proceedings of the 2002 ACM/IEEE conference on Supercomputing Supercomputing '02**

Publisher: IEEE Computer Society Press

Full text available:  pdf(155.23 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Many high performance distributed applications require high network throughput but are able to achieve only a small fraction of the available bandwidth. A common cause of this problem is improperly tuned network settings. Tuning techniques, such as setting the correct TCP buffers and using parallel streams, are well known in the networking community, but outside the networking community they are infrequently applied. In this paper, we describe a tuning daemon that uses TCP instrumentation data f ...

Keywords: TCP, autotuning, data grids, high-performance networking

12 Spatio-temporal correlations and rollback distributions in optimistic simulations 

B. J. Overeinder, A. Schoneveld, P. M. A. Sloot

May 2001 **Proceedings of the fifteenth workshop on Parallel and distributed simulation PADS '01**

Publisher: IEEE Computer Society

Full text available:  pdf(592.77 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

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In this paper we study the influence of spatio-temporal correlations on the dynamic runtime behavior of the optimistic parallel Time Warp simulation method. By using the Ising spin model, we show experimentally that the distribution of the number of rolled back events behaves as a power-law distribution over a large range of sub-critical Ising temperatures and decays exponentially for super-critical Ising temperatures. For critical Ising temperatures, where long-range correlations occur, t ...

13 Kernels: Vertigo: automatic performance-setting for Linux

 Krisztián Flautner, Trevor Mudge
December 2002 **ACM SIGOPS Operating Systems Review**, Volume 36 Issue SI

Publisher: ACM Press

Full text available:  pdf(2.01 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Combining high performance with low power consumption is becoming one of the primary objectives of processor designs. Instead of relying just on sleep mode for conserving power, an increasing number of processors take advantage of the fact that reducing the clock frequency and corresponding operating voltage of the CPU can yield quadratic decrease in energy use. However, performance reduction can only be beneficial if it is done transparently, without causing the software to miss its deadlines. ...

14 Digital simulation as an evaluation aid in the development of dynamic color graphics human-machine interfaces

James R. Delaney

March 1982 **Proceedings of the 15th annual symposium on Simulation ANSS '82**

Publisher: IEEE Computer Society Press

Full text available:  pdf(1.32 MB)

Additional Information: [full citation](#), [abstract](#), [index terms](#)

As part of a continuing effort in the area of system control of military communications networks, the MITRE Corporation, under the auspices of the Rome Air Development Center, has developed a testbed for the evaluation of graphics human-machine interfaces for communications network control centers. The testbed uses a MITRE-developed communications network simulator, SCAT/G, to drive the candidate network status displays. By duplicating the dynamics of the communications network and its envi ...

15 Controlling high bandwidth aggregates in the network

 Ratul Mahajan, Steven M. Bellovin, Sally Floyd, John Ioannidis, Vern Paxson, Scott Shenker
July 2002 **ACM SIGCOMM Computer Communication Review**, Volume 32 Issue 3

Publisher: ACM Press

Full text available:  pdf(299.37 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The current Internet infrastructure has very few built-in protection mechanisms, and is therefore vulnerable to attacks and failures. In particular, recent events have illustrated the Internet's vulnerability to both denial of service (DoS) attacks and flash crowds in which one or more links in the network (or servers at the edge of the network) become severely congested. In both DoS attacks and flash crowds the congestion is due neither to a single flow, nor to a general increase in traffic, bu ...

16 Session 7: Saving energy with just in time instruction delivery

 Tejas Karkhanis, James E. Smith, Pradip Bose
August 2002 **Proceedings of the 2002 international symposium on Low power electronics and design ISLPED '02**

Publisher: ACM Press

Full text available:  pdf(225.32 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Just-In-Time instruction delivery is a general method for saving energy in a microprocessor by dynamically limiting the number of in-flight instructions. The goal is to save energy by 1) fetching valid instructions no sooner than necessary, avoiding cycles stalled in the pipeline -- especially the issue queue, and 2) reducing the number of fetches and subsequent processing of mis-speculated instructions. A simple algorithm monitors performance and adjusts the maximum number of in-flight instruct ...

Keywords: adaptive processor, instruction delivery, low-power

17 Papers: An analysis of using reflectors for distributed denial-of-service attacks



Vern Paxson

July 2001 **ACM SIGCOMM Computer Communication Review**, Volume 31 Issue 3

Publisher: ACM Press

Full text available: [pdf\(1.02 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Attackers can render distributed denial-of-service attacks more difficult to defend against by bouncing their flooding traffic off of *reflectors*; that is, by spoofing requests from the victim to a large set of Internet servers that will in turn send their combined replies to the victim. The resulting dilution of locality in the flooding stream complicates the victim's abilities both to isolate the attack traffic in order to block it, and to use traceback techniques for locating the source ...

18 Risks to the public



P. G. Neumann

October 1987 **ACM SIGSOFT Software Engineering Notes**, Volume 12 Issue 4

Publisher: ACM Press

Full text available: [pdf\(1.60 MB\)](#) Additional Information: [full citation](#), [index terms](#)

19 What packets may come: automata for network monitoring



Karthikeyan Bhargavan, Satish Chandra, Peter J. McCann, Carl A. Gunter

January 2001 **ACM SIGPLAN Notices , Proceedings of the 28th ACM SIGPLAN-SIGACT symposium on Principles of programming languages POPL '01**, Volume 36 Issue 3

Publisher: ACM Press

Full text available: [pdf\(284.05 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We consider the problem of monitoring an interactive device, such as an implementation of a network protocol, in order to check whether its execution is consistent with its specification. At first glance, it appears that a monitor could simply follow the input-output trace of the device and check it against the specification. However, if the monitor is able to observe inputs and outputs only from a vantage point *external* to the device---as is typically the case---the problem becomes surpris ...

20 Beyond document similarity: understanding value-based search and browsing technologies



Andreas Paepcke, Hector Garcia-Molina, Gerard Rodriguez-Mula, Junghoo Cho

March 2000 **ACM SIGMOD Record**, Volume 29 Issue 1

Publisher: ACM Press

Full text available: [pdf\(1.29 MB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

In the face of small, one or two word queries, high volumes of diverse documents on the Web are overwhelming search and ranking technologies that are based on document similarity measures. The increase of multimedia data within documents sharply

exacerbates the shortcomings of these approaches. Recently, research prototypes and commercial experiments have added techniques that augment similarity-based search and ranking. These techniques rely on judgments about the 'value' of documents. Jud ...

Keywords: World-Wide Web, collaborative filtering, hypertext, information filters, information retrieval, links, metadata, ranking, relevance, search engines

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IEEE JNL IEEE Journal or Magazine

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IET JNL IET Journal or Magazine

 1. **Sustaining availability of Web services under distributed denial of service**

Jun Xu; Wooyong Lee;
Computers, IEEE Transactions on
 Volume 52, Issue 2, Feb. 2003 Page(s):195 - 208
 Digital Object Identifier 10.1109/TC.2003.1176986
[AbstractPlus](#) | [References](#) | Full Text: [PDF\(3000 KB\)](#) IEEE JNL
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IEEE CNF IEEE Conference Proceeding

 2. **Engineering of a global defense infrastructure for DDoS attacks**

Wan, K.K.K.; Chang, R.K.C.;
Networks, 2002. ICON 2002. 10th IEEE International Conference on
 27-30 Aug. 2002 Page(s):419 - 427
 Digital Object Identifier 10.1109/ICON.2002.1033348
[AbstractPlus](#) | Full Text: [PDF\(709 KB\)](#) IEEE CNF
[Rights and Permissions](#)

IET CNF IET Conference Proceeding

 3. **DDoS attacks and defense mechanisms: a classification**

Douligeris, C.; Mitrokotsa, A.;
Signal Processing and Information Technology, 2003. ISSPIT 2003. Proceedings of the IEEE International Symposium on
 14-17 Dec. 2003 Page(s):190 - 193
 Digital Object Identifier 10.1109/ISSPIT.2003.1341092
[AbstractPlus](#) | Full Text: [PDF\(383 KB\)](#) IEEE CNF
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IEEE STD IEEE Standard

 4. **Random flow network modeling and simulations for DDoS attack mitigation**

Jiejun Kong; Mirza, M.; Shu, J.; Yoedhana, C.; Gerla, M.; Songwu Lu;
Communications, 2003. ICC '03. IEEE International Conference on
 Volume 1, 11-15 May 2003 Page(s):487 - 491 vol.1
 Digital Object Identifier 10.1109/ICC.2003.1204224

[AbstractPlus](#) | Full Text: [PDF\(300 KB\)](#) IEEE CNF
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 5. **NetBouncer: client-legitimacy-based high-performance DDoS filtering**

Thomas, R.; Mark, B.; Johnson, T.; Croall, J.;
DARPA Information Survivability Conference and Exposition, 2003. Proceedings of the
 Volume 1, 22-24 April 2003 Page(s):14 - 25 vol.1

[AbstractPlus](#) | Full Text: [PDF\(2017 KB\)](#) IEEE CNF
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- 6. IP traceback-based intelligent packet filtering: a novel technique for defending Internet DDoS attacks**
Minho Sung; Jun Xu;
[Network Protocols, 2002. Proceedings. 10th IEEE International Conference on](#)
12-15 Nov. 2002 Page(s):302 - 311
[AbstractPlus](#) | Full Text: [PDF\(404 KB\)](#) IEEE CNF
[Rights and Permissions](#)

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Minho Sung; Jun Xu;
[Parallel and Distributed Systems, IEEE Transactions on](#)
Volume 14, Issue 9, Sept. 2003 Page(s):861 - 872
Digital Object Identifier 10.1109/TPDS.2003.1233709
[AbstractPlus](#) | [References](#) | Full Text: [PDF\(3988 KB\)](#) IEEE JNL
[Rights and Permissions](#)

- 8. DDoS attack detection and wavelets**
Li, L.; Lee, G.;
[Computer Communications and Networks, 2003. ICCCN 2003. Proceedings. T](#)
[International Conference on](#)
20-22 Oct. 2003 Page(s):421 - 427
Digital Object Identifier 10.1109/ICCCN.2003.1284203
[AbstractPlus](#) | Full Text: [PDF\(523 KB\)](#) IEEE CNF
[Rights and Permissions](#)

- 9. Performance of IP address fragmentation strategies for DDoS traceback**
Hamadeh, I.; Kesidis, G.;
[IP Operations and Management, 2003. \(IPOM 2003\). 3rd IEEE Workshop on](#)
1-3 Oct. 2003 Page(s):1 - 7
[AbstractPlus](#) | Full Text: [PDF\(518 KB\)](#) IEEE CNF
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- 10. Pi: a path identification mechanism to defend against DDoS attacks**
Yaar, A.; Perrig, A.; Song, D.;
[Security and Privacy, 2003. Proceedings. 2003 Symposium on](#)
11-14 May 2003 Page(s):93 - 107
[AbstractPlus](#) | Full Text: [PDF\(462 KB\)](#) IEEE CNF
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- 11. Attacking DDoS at the source**
Mirkovic, J.; Prier, G.; Reiher, P.;
[Network Protocols, 2002. Proceedings. 10th IEEE International Conference on](#)
12-15 Nov. 2002 Page(s):312 - 321
[AbstractPlus](#) | Full Text: [PDF\(348 KB\)](#) IEEE CNF
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- 12. Defending against flooding-based distributed denial-of-service attacks: a**
Chang, R.K.C.;
[Communications Magazine, IEEE](#)
Volume 40, Issue 10, Oct. 2002 Page(s):42 - 51
Digital Object Identifier 10.1109/MCOM.2002.1039856
[AbstractPlus](#) | [References](#) | Full Text: [PDF\(1940 KB\)](#) IEEE JNL
[Rights and Permissions](#)

- 13. DDoS tolerant networks**
Feinstein, L.; Schnackenberg, D.; Balupari, R.; Kindred, D.;
DARPA Information Survivability Conference and Exposition, 2003. Proceedings
Volume 2, 22-24 April 2003 Page(s):73 - 75 vol.2
Digital Object Identifier 10.1109/DISCEX.2003.1194924
[AbstractPlus](#) | [Full Text: PDF\(320 KB\)](#) | [IEEE CNF](#)
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- 14. Transport-aware IP routers: a built-in protection mechanism to counter DDoS attacks**
Haining Wang; Shin, K.G.;
Parallel and Distributed Systems, IEEE Transactions on
Volume 14, Issue 9, Sept. 2003 Page(s):873 - 884
Digital Object Identifier 10.1109/TPDS.2003.1233710
[AbstractPlus](#) | [References](#) | [Full Text: PDF\(989 KB\)](#) | [IEEE JNL](#)
[Rights and Permissions](#)

- 15. Distributed denial of service defense attack tradeoff analysis (DDOS-DA1)**
Blackert, W.J.; Gregg, D.M.; Castner, A.K.; Horn, R.L.; Jokerst, R.M.; Kyle, E.M.;
DARPA Information Survivability Conference and Exposition, 2003. Proceedings
Volume 2, 22-24 April 2003 Page(s):66 - 67 vol.2
Digital Object Identifier 10.1109/DISCEX.2003.1194921
[AbstractPlus](#) | [Full Text: PDF\(237 KB\)](#) | [IEEE CNF](#)
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- 16. Statistical approaches to DDoS attack detection and response**
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DARPA Information Survivability Conference and Exposition, 2003. Proceedings
Volume 1, 22-24 April 2003 Page(s):303 - 314 vol.1
[AbstractPlus](#) | [Full Text: PDF\(691 KB\)](#) | [IEEE CNF](#)
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- 17. The diagnosis of DDoS attack and a novel approach to optimizing control**
Zhao Wen-Wang; Qin Shi-Yin;
Info-tech and Info-net, 2001. Proceedings. ICII 2001 - Beijing. 2001 International Conference on
Volume 4, 29 Oct.-1 Nov. 2001 Page(s):278 - 283 vol.4
Digital Object Identifier 10.1109/ICII.2001.983832
[AbstractPlus](#) | [Full Text: PDF\(311 KB\)](#) | [IEEE CNF](#)
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- 18. On the defense of the distributed denial of service attacks: an on-off feed-back approach**
Yong Xiong; Liu, S.; Sun, P.;
Systems, Man and Cybernetics, Part A, IEEE Transactions on
Volume 31, Issue 4, July 2001 Page(s):282 - 293
Digital Object Identifier 10.1109/3468.935045
[AbstractPlus](#) | [References](#) | [Full Text: PDF\(264 KB\)](#) | [IEEE JNL](#)
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- 19. Formal framework for modeling and simulation of DDoS attacks based on the game theory of hackers-agents**
Kotenko, I.; Alexeev, A.; Man'kov, E.;
Intelligent Agent Technology, 2003. IAT 2003. IEEE/WIC International Conference on
13-16 Oct. 2003 Page(s):507 - 510
[AbstractPlus](#) | [Full Text: PDF\(309 KB\)](#) | [IEEE CNF](#)
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- 20. Tradeoffs of DDoS solutions**
Min Fan; Zhang Jun-yan; Li Wan-pei; Yang Guo-wei;

[Parallel and Distributed Computing, Applications and Technologies, 2003. PDCT 2003](#)
[Proceedings of the Fourth International Conference on](#)
27-29 Aug. 2003 Page(s):198 - 200
[AbstractPlus](#) | Full Text: [PDF\(299 KB\)](#) IEEE CNF
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- 21. Protection from distributed denial of service attacks using history-based**
Tao Peng; Leckie, C.; Ramamohanarao, K.;
[Communications, 2003. ICC '03. IEEE International Conference on](#)
Volume 1, 11-15 May 2003 Page(s):482 - 486 vol.1
[AbstractPlus](#) | Full Text: [PDF\(301 KB\)](#) IEEE CNF
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- 22. Analyzing interaction between distributed denial of service attacks and n**
technologies
Blackert, W.J.; Gregg, D.M.; Castner, A.K.; Kyle, E.M.; Hom, R.L.; Jokerst, R.M.
[DARPA Information Survivability Conference and Exposition, 2003. Proceedin](#)
Volume 1, 22-24 April 2003 Page(s):26 - 36 vol.1
[AbstractPlus](#) | Full Text: [PDF\(683 KB\)](#) IEEE CNF
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- 23. Scalable DDoS protection using route-based filtering - DISCEX III demon**
Kihong Park;
[DARPA Information Survivability Conference and Exposition, 2003. Proceedin](#)
Volume 2, 22-24 April 2003 Page(s):97 vol.2
Digital Object Identifier 10.1109/DISCEX.2003.1194933
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- 24. MF (minority first) scheme for defeating distributed denial of service atta**
Gaeil Ahn; Kiyoung Kim; Jongsoo Jang;
[Computers and Communication, 2003. \(ISCC 2003\). Proceedings. Eighth IEEE](#)
[Symposium on](#)
2003 Page(s):1233 - 1238 vol.2
Digital Object Identifier 10.1109/ISCC.2003.1214283
[AbstractPlus](#) | Full Text: [PDF\(496 KB\)](#) IEEE CNF
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Mirkovic, J.; Prier, G.; Reiher, P.;
[Network Computing and Applications, 2003. NCA 2003. Second IEEE Internat](#)
[on](#)
16-18 April 2003 Page(s):171 - 178
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Relevance scale 

1 [On the effectiveness of route-based packet filtering for distributed DoS attack prevention in power-law internets](#) 
 Kihong Park, Heejo Lee
 August 2001 **ACM SIGCOMM Computer Communication Review , Proceedings of the 2001 conference on Applications, technologies, architectures, and protocols for computer communications SIGCOMM '01**, Volume 31 Issue 4
 Publisher: ACM Press

Full text available:  pdf(313.26 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Denial of service (DoS) attack on the Internet has become a pressing problem. In this paper, we describe and evaluate route-based distributed packet filtering (DPF), a novel approach to distributed DoS (DDoS) attack prevention. We show that DPF achieves proactivity and scalability, and we show that there is an intimate relationship between the effectiveness of DPF at mitigating DDoS attack and power-law network topology. The salient features of this work are two-fold. First, we show that DPF is ...

2 [Session 3: inference and statistical analysis: Statistical analysis of malformed packets and their origins in the modern internet](#) 
 Marina Bykova, Shawn Ostermann
 November 2002 **Proceedings of the 2nd ACM SIGCOMM Workshop on Internet measurement IMW '02**
 Publisher: ACM Press

Full text available:  pdf(687.50 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this work, we collect and analyze all of the IP and TCP headers of packets seen on a network that either violate existing standards or should not appear in modern internets. Our goal is to determine the reason that these packets appear on the network and evaluate what proportion of such packets could cause actual damage. Thus, we examine and divide the unusual packets obtained during our experiments into several categories based on their type and possible cause and show the results.

3 [SOS: secure overlay services](#) 
 Angelos D. Keromytis, Vishal Misra, Dan Rubenstein
 August 2002 **ACM SIGCOMM Computer Communication Review , Proceedings of the 2002 conference on Applications, technologies, architectures, and protocols for computer communications SIGCOMM '02**, Volume 32 Issue 4

Publisher: ACM Press

Full text available:  pdf(210.90 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Denial of service (DoS) attacks continue to threaten the reliability of networking systems. Previous approaches for protecting networks from DoS attacks are reactive in that they wait for an attack to be launched before taking appropriate measures to protect the network. This leaves the door open for other attacks that use more sophisticated methods to mask their traffic. We propose an architecture called Secure Overlay Services (SOS) that proactively prevents DoS attacks, geared toward supportin ...

Keywords: denial of service attacks, network security, overlay networks

4 Gauging the risks of internet elections

 Deborah M. Phillips, Hans A. von Spakovsky

January 2001 **Communications of the ACM**, Volume 44 Issue 1

Publisher: ACM Press

Full text available:  pdf(159.11 KB)  html(35.52 KB) Additional Information: [full citation](#), [references](#), [index terms](#)



5 The case for internet voting

 Joe Mohen, Julia Glidden

January 2001 **Communications of the ACM**, Volume 44 Issue 1

Publisher: ACM Press

Full text available:  pdf(158.11 KB)  html(35.34 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



6 Defending wireless infrastructure against the challenge of DDoS attacks

Xianjun Geng, Yun Huang, Andrew B. Whinston

June 2002 **Mobile Networks and Applications**, Volume 7 Issue 3

Publisher: Kluwer Academic Publishers

Full text available:  pdf(313.57 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)



This paper addresses possible Distributed Denial-of-Service (DDoS) attacks toward the wireless Internet including the Wireless Extended Internet, the Wireless Portal Network, and the Wireless Ad Hoc network. We propose a conceptual model for defending against DDoS attacks on the wireless Internet, which incorporates both cooperative technological solutions and economic incentive mechanisms built on usage-based fees. Cost-effectiveness is also addressed through an illustrative implementation sche ...

Keywords: DDoS attack, PBN, wireless ad hoc network, wireless extended internet, wireless infrastructure, wireless portal network

7 Protecting web servers from distributed denial of service attacks

 Frank Kargl, Joern Maier, Michael Weber

April 2001 **Proceedings of the 10th international conference on World Wide Web WWW '01**

Publisher: ACM Press

Full text available:  pdf(390.23 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



Keywords: DDoS, Linux, class based routing, distributed denial of service attacks, web server security

8 A practical method to counteract denial of service attacks

 Udaya Kiran Tupakula, Vijay Varadharajan

February 2003 **Proceedings of the 26th Australasian computer science conference - Volume 16 ACSC '03**

Publisher: Australian Computer Society, Inc.

Full text available:  pdf(58.71 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Today distributed denial of service (DDoS) attacks are causing major problems to conduct online business over the Internet. Recently several schemes have been proposed on how to prevent some of these attacks, but they suffer from a range of problems, some of them being impractical and others not being effective against these attacks. In this paper, we propose a Controller-Agent model that would greatly minimize DDoS attacks on Internet. With a new packet marking technique and agent design our sc ...

Keywords: DoS, broad attack signatures, controller-agent model, denial of service, packet marking

9 Papers: An analysis of using reflectors for distributed denial-of-service attacks

 Vern Paxson

July 2001 **ACM SIGCOMM Computer Communication Review**, Volume 31 Issue 3

Publisher: ACM Press

Full text available:  pdf(1.02 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Attackers can render distributed denial-of-service attacks more difficult to defend against by bouncing their flooding traffic off of *reflectors*; that is, by spoofing requests from the victim to a large set of Internet servers that will in turn send their combined replies to the victim. The resulting dilution of locality in the flooding stream complicates the victim's abilities both to isolate the attack traffic in order to block it, and to use traceback techniques for locating the source ...

10 Network behavior: The effectiveness of request redirection on CDN robustness

 Limin Wang, Vivek Pai, Larry Peterson

December 2002 **ACM SIGOPS Operating Systems Review**, Volume 36 Issue SI

Publisher: ACM Press

Full text available:  pdf(1.86 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

It is becoming increasingly common to construct network services using redundant resources geographically distributed across the Internet. Content Distribution Networks are a prime example. Such systems distribute client requests to an appropriate server based on a variety of factors---e.g., server load, network proximity, cache locality--in an effort to reduce response time and increase the system capacity under load. This paper explores the design space of strategies employed to redirect requ ...

11 TAE Plus: Transportable Applications Environment Plus: a user interface

 development environment

Martha R. Szczur, Sylvia B. Sheppard

January 1993 **ACM Transactions on Information Systems (TOIS)**, Volume 11 Issue 1

Publisher: ACM Press

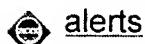
Full text available:  pdf(1.99 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The Transportable Applications Environment Plus (TAE Plus) is a NASA-developed user interface development environment (UIDE) for the rapid prototyping, evaluation, implementation, and management of user interfaces. TAE Plus provides an intuitive What You See Is What You Get (WYSIWYG) WorkBench for designing an application's user interface. The WorkBench supports the creation and sequencing of displays, including real-time, data-driven display objects. Users can define context-sensitive help ...

Keywords: graphical user interfaces, prototyping, user interface development tools

12 [Intrusion detection: Constructing attack scenarios through correlation of intrusion alerts](#)



Peng Ning, Yun Cui, Douglas S. Reeves

November 2002 **Proceedings of the 9th ACM conference on Computer and communications security CCS '02**

Publisher: ACM Press

Full text available:  pdf(184.18 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Traditional intrusion detection systems (IDSs) focus on low-level attacks or anomalies, and raise alerts independently, though there may be logical connections between them. In situations where there are intensive intrusions, not only will actual alerts be mixed with false alerts, but the amount of alerts will also become unmanageable. As a result, it is difficult for human users or intrusion response systems to understand the alerts and take appropriate actions. This paper presents a practical ...

Keywords: alert correlation, attack scenarios, intrusion detection

13 [Controlling high bandwidth aggregates in the network](#)



Ratul Mahajan, Steven M. Bellovin, Sally Floyd, John Ioannidis, Vern Paxson, Scott Shenker
July 2002 **ACM SIGCOMM Computer Communication Review**, Volume 32 Issue 3

Publisher: ACM Press

Full text available:  pdf(299.37 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The current Internet infrastructure has very few built-in protection mechanisms, and is therefore vulnerable to attacks and failures. In particular, recent events have illustrated the Internet's vulnerability to both denial of service (DoS) attacks and flash crowds in which one or more links in the network (or servers at the edge of the network) become severely congested. In both DoS attacks and flash crowds the congestion is due neither to a single flow, nor to a general increase in traffic, bu ...

14 [Network security: Efficient packet marking for large-scale IP traceback](#)



Michael T. Goodrich
November 2002 **Proceedings of the 9th ACM conference on Computer and communications security CCS '02**

Publisher: ACM Press

Full text available:  pdf(239.98 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present a new approach to IP traceback based on the probabilistic packet marking paradigm. Our approach, which we call randomize-and-link, uses large checksum cords to "link" message fragments in a way that is highly scalable, for the checksums serve both

as associative addresses and data integrity verifiers. The main advantage of these checksum cords is that they spread the addresses of possible router messages across a spectrum that is too large for the attacker to easily create messages th ...

Keywords: denial-of-service, packet marking, traceback

15 Technical papers: Software evaluation: Security attribute evaluation method: a cost-benefit approach

 Shawn A. Butler

May 2002 **Proceedings of the 24th International Conference on Software Engineering ICSE '02**

Publisher: ACM Press

Full text available:  pdf(932.08 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Conducting cost-benefit analyses of architectural attributes such as security has always been difficult, because the benefits are difficult to assess. Specialists usually make security decisions, but program managers are left wondering whether their investment in security is well spent. This paper summarizes the results of using a cost-benefit analysis method called SAEM to compare alternative security designs in a financial and accounting information system. The case study presented in this pap ...

16 Business: The 8th layer: Shoring up security—an imperfect art

 Kate Gerwig

June 2000 **netWorker**, Volume 4 Issue 2

Publisher: ACM Press

Full text available:  pdf(327.16 KB)  html(15.60 KB) Additional Information: [full citation](#), [index terms](#)

17 Inside Risks: denial-of-service attacks

 Peter G. Neumann

April 2000 **Communications of the ACM**, Volume 43 Issue 4

Publisher: ACM Press

Full text available:  pdf(49.45 KB)  html(7.80 KB) Additional Information: [full citation](#), [citations](#), [index terms](#)

18 Single-packet IP traceback

Alex C. Snoeren, Craig Partridge, Luis A. Sanchez, Christine E. Jones, Fabrice Tchakountio, Beverly Schwartz, Stephen T. Kent, W. Timothy Strayer

December 2002 **IEEE/ACM Transactions on Networking (TON)**, Volume 10 Issue 6

Publisher: IEEE Press

Full text available:  pdf(528.41 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The design of the IP protocol makes it difficult to reliably identify the originator of an IP packet. Even in the absence of any deliberate attempt to disguise a packet's origin, widespread packet forwarding techniques such as NAT and encapsulation may obscure the packet's true source. Techniques have been developed to determine the source of large packet flows, but, to date, no system has been presented to track individual packets in an efficient, scalable fashion. We present a hash-based techn ...

Keywords: IP traceback, computer network management, computer network security,

denial of service (DoS), network fault diagnosis, wide-area networks (WANs)

19 Advertising and Security for E-Commerce: Protecting electronic commerce from distributed denial-of-service attacks 

José Brustoloni

May 2002 **Proceedings of the 11th international conference on World Wide Web
WWW '02**

Publisher: ACM Press

Full text available:  pdf(133.78 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

It is widely recognized that distributed denial-of-service (DDoS) attacks can disrupt electronic commerce and cause large revenue losses. However, effective defenses continue to be mostly unavailable. We describe and evaluate VIPnet, a novel value-added network service for protecting e-commerce and other transaction-based sites from DDoS attacks. In VIPnet, e-merchants pay Internet Service Providers (ISPs) to carry the packets of the e-merchants' best clients (called VIPs) in a privileged class ...

Keywords: denial of service, electronic commerce, quality of service

20 Systems: BEN: description of the PLUM system as used for MUC-6 

R. Weischedel

November 1993 **Proceedings of the 6th conference on Message understanding MUC6 '95**

Publisher: Association for Computational Linguistics

Full text available:  pdf(1.09 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

This paper provides a quick summary of our technical approach, which has been developing since 1991 and was first fielded in MUC-3. First a quick review of what is new is provided, then a walkthrough of system components. Perhaps <u>most interesting</u> is our analysis, following the walkthrough, of what we learned through MUC-6 and of what directions we would take now to break the performance barriers of current information extraction technology.

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